

What is claimed is:

5

*Ins 93*

10

15

20

25

30

1. A recombinant infectious laryngotracheitis virus comprising an infectious laryngotracheitis viral genome which contains a deletion in the unique short region of the infectious laryngotracheitis viral genome, wherein the deletion is in the glycoprotein G (gG) gene.
2. The recombinant infectious laryngotracheitis virus of claim 1, further characterized by a deletion in the US2 gene.
3. The recombinant infectious laryngotracheitis virus of claim 1, further characterized by a deletion in the ORF4 gene and a deletion in the UL47-like gene.
4. The recombinant infectious laryngotracheitis virus of claim 1, further characterized by a deletion in the glycoprotein 60 (g60) gene.
5. The recombinant infectious laryngotracheitis virus of claim 1, further characterized by a deletion in the glycoprotein I (gI) gene.
6. The recombinant infectious laryngotracheitis virus of claim 1, further characterized by a deletion in the thymidine kinase (TK) gene.
7. The recombinant infectious laryngotracheitis virus of claim 1, which further comprises a foreign gene inserted within a non-essential site of the infectious laryngotracheitis viral genome, wherein the foreign gene is capable of being expressed in a recombinant infectious laryngotracheitis infected host cell.
8. The recombinant infectious laryngotracheitis virus of claim 7, wherein the foreign gene is inserted into a gene selected from a group consisting

of the US2 gene, UL47-like gene, ORF4 gene, glycoprotein G (gG) gene, glycoprotein 60 (g60) gene, and glycoprotein I (gI) gene.

- 5 9. The recombinant infectious laryngotracheitis virus of claim 7, wherein the foreign gene encodes a screenable marker.
- 10 10. The recombinant infectious laryngotracheitis virus of claim 9, wherein the screenable marker is *E. coli* B-galactosidase.
- 10 11. The recombinant infectious laryngotracheitis virus of claim 9, wherein the screenable marker is *E. coli* B-glucuronidase.
- 15 12. The recombinant infectious laryngotracheitis virus of claim 7, wherein the foreign gene encodes an antigenic polypeptide.
- 20 13. The recombinant infectious laryngotracheitis virus of claim 12, wherein the antigenic polypeptide, when introduced into the host cell, induces production of protective antibodies against an avian disease causing agent from which the antigen is derived or derivable.
- 25 14. The recombinant infectious laryngotracheitis virus of claim 13, wherein the antigenic polypeptide is derived or derivable from a group consisting of infectious bronchitis virus, Newcastle disease virus, infectious bursal disease virus, and Marek's disease virus.
- 30 15. The recombinant infectious laryngotracheitis virus of claim 13, wherein the antigenic polypeptide is derived or derivable from a group consisting of avian encephalomyelitis virus, avian reovirus, avian paramyxovirus, avian influenza virus, avian adenovirus, fowl pox virus, avian coronavirus, avian rotavirus, chick anemia agent, *Salmonella* spp., *E. coli*, *Pasteurella* spp., *Bordetella* spp., *Eimeria* spp., *Histomonas* spp.,

*Trichomonas spp.*, Poultry nematodes, cestodes, trematodes, poultry mites/lice, poultry protozoa.

16. The recombinant infectious laryngotracheitis virus of claim 7, wherein the foreign gene is under control of an endogenous upstream promoter.
17. The recombinant infectious laryngotracheitis virus of claim 7, wherein the foreign gene is under control of a heterologous upstream promoter.
18. The recombinant infectious laryngotracheitis virus of claim 17, wherein the promoter is selected from a group consisting of the HCMV IE promoter, PRV gX promoter, and BHV-1.1 VP8 promoter.
19. A recombinant infectious laryngotracheitis virus comprising the infectious laryngotracheitis viral genome which contains a deletion in the unique short region of the viral genome, wherein the deletion is in the glycoprotein gG gene, so that upon replication the recombinant infectious laryngotracheitis virus produces no glycoprotein gG.
20. A recombinant infectious laryngotracheitis virus comprising the infectious laryngotracheitis viral genome which contains a deletion in the unique short region of the viral genome, wherein the deletion is in the glycoprotein gI gene, so that upon replication, the recombinant infectious virus produces no glycoprotein gI.
21. A recombinant infectious laryngotracheitis virus of claim 20, which further comprises a deletion in the glycoprotein gG gene so that upon replication, the recombinant virus produces no glycoprotein gG.
22. The recombinant infectious laryngotracheitis virus comprising the infectious laryngotracheitis viral genome which contains a deletion in the unique short region of the viral genome, wherein the deletion is in

a gene selected from a group consisting of the US2 gene, the UL47-like gene, and the glycoprotein g60 gene.

5 23. A recombinant infectious laryngotracheitis virus of claim 22, wherein the foreign gene is inserted in the gene selected from a group consisting of the US2 gene, UL-47 like gene, ORF4 gene and glycoprotein g60 gene.

10 24. The recombinant infectious laryngotracheitis virus of claim 23, wherein the foreign gene encodes a screenable marker.

25. The recombinant infectious laryngotracheitis virus of claim 24, wherein the screenable marker is *E. coli* B-galactosidase.

15 26. The recombinant infectious laryngotracheitis virus of claim 24, wherein the screenable marker is *E. coli* B-glucuronidase.

20 27. The recombinant infectious laryngotracheitis virus of claim 23, wherein the foreign gene encodes an antigenic polypeptide.

28. The recombinant infectious laryngotracheitis virus of claim 27, wherein the antigenic polypeptide, when introduced into the host cell, induces production of protective antibodies against an avian disease causing agent from which the antigen is derived or derivable.

25 29. The recombinant infectious laryngotracheitis virus of claim 28, wherein the antigenic polypeptide is derived from or derivable from a group consisting of infectious bronchitis virus, Newcastle disease virus, infectious bursal disease virus, and Marek's disease virus.

30 30. The recombinant infectious laryngotracheitis virus of claim 28, wherein the antigenic polypeptide is derived from or derivable from a group

consisting of avian encephalomyelitis virus, avian reovirus, avian paramyxovirus, avian influenza virus, avian adenovirus, fowl pox virus, avian coronavirus, avian rotavirus, chick anemia agent, *Salmonella spp.*, *E. coli.*, *Pasteurella spp.*, *Bordetella spp.*, *Eimeria spp.*, *Histomonas spp.*, *Trichomonas spp.*, Poultry nematodes, cestodes, trematodes, poultry mites/lice, poultry protozoa.

31. The recombinant infectious laryngotracheitis virus of claim 23, wherein the foreign gene is under control of an endogenous upstream infectious laryngotracheitis virus promoter.

32. The recombinant infectious laryngotracheitis virus of claim 23, wherein the foreign gene is under control of a heterologous upstream promoter.

33. The recombinant infectious laryngotracheitis virus of claim 32, wherein the promoter is selected from a group consisting of HCMV IE promoter, PRV gX promoter, and BHV-1.1 VP8 promoter.

34. A vaccine for infectious laryngotracheitis virus comprising an effective immunizing amount of the recombinant infectious laryngotracheitis virus of claim 1 and a suitable carrier.

35. A multivalent vaccine for infectious laryngotracheitis and for one or more of other avian diseases comprising an effective immunizing amount of the recombinant virus of claim 13 and a suitable carrier.

36. A method of immunizing chickens or other poultry against infectious laryngotracheitis which comprises administering to said chickens or other poultry an effective immunizing amount of the vaccine of claim 34.

37. A method of distinguishing chickens or other poultry which are vaccinated with the vaccine of claim 19 from those which are infected with a naturally-occurring infectious laryngotracheitis virus which comprises analyzing samples of body fluids from chickens or other poultry for the presence of glycoprotein gG and at least one other antigen normally expressed in chickens or other poultry infected by a naturally-occurring infectious laryngotracheitis virus, the presence of those antigens normally expressed in infected chickens but the absence of glycoprotein gG being indicative of vaccination with the vaccine of claim 19 and not infection with a naturally-occurring infectious laryngotracheitis virus.
38. A homology vector for producing a recombinant infectious laryngotracheitis virus by deleting DNA which encodes a screenable marker, which has been inserted into the infectious laryngotracheitis virus genomic DNA, which comprises a double stranded DNA molecule consisting essentially of a double-stranded DNA to be deleted, which is flanked on each side by a double stranded DNA homologous to the infectious laryngotracheitis virus glycoprotein gG gene, glycoprotein gI gene, US2 gene, or UL-47 like gene.